



# Neet AIIMS Preparation

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# Neetaimspreparation

## 1

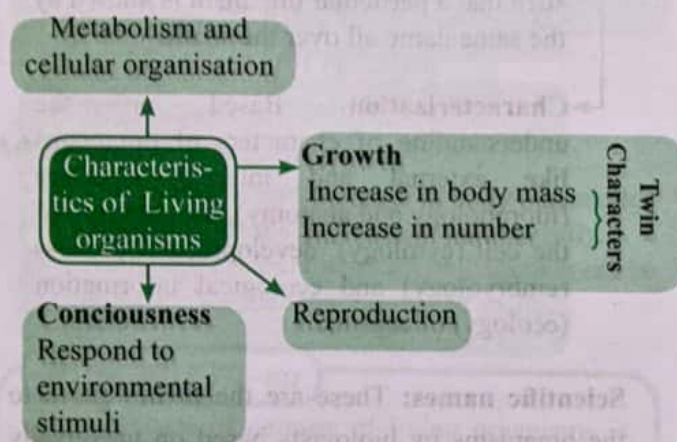
## THE LIVING WORLD

### What Is 'Living'?

There are certain distinctive characteristics exhibited by living organisms which distinguish them from non-living.

### Unique Characteristics of Living Organisms

The most distinctive features exhibited by living organisms includes:

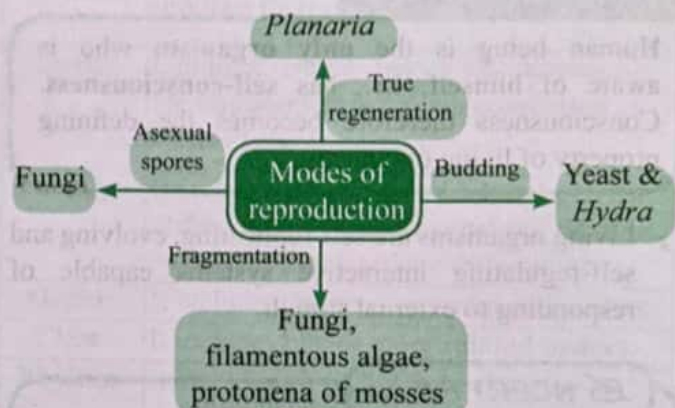


### 1. Growth

- ▶ In majority of higher animals and plants, growth and reproduction are **mutually exclusive events**. One must remember that increase in body mass is considered as growth.
- ▶ Non-living objects also grow by accumulation of material on the surface. E.g., mountains, boulders and sand mounds. Growth, therefore, **cannot** be taken as a defining property of living organisms.
- ▶ In living organisms, the growth is internal but in non-living organisms, the growth is external.

### 2. Reproduction

- ▶ No non-living object is capable of reproducing or replicating by itself.
- ▶ Organisms reproduce by both sexual and asexual means.



- ▶ Unicellular organisms such as bacteria, unicellular algae or *Amoeba*, reproduction is synonymous with growth, i.e., increase in number of cells.

### ✓ Maximise Your Marks

Many organisms such as mules, sterile worker bees, infertile human couples, etc., do not reproduce. Hence, reproduction also **cannot** be an all-inclusive defining characteristic of living organisms.

### 3. Metabolism and Cellular Organisation

- ▶ The sum total of all the chemical reactions occurring in our body is called **metabolism**.
- ▶ No non-living object exhibits metabolism.
- ▶ An isolated metabolic reaction(s) outside the body of an organism, performed in a test tube is neither living nor non-living. Hence, while metabolism is a **defining feature** of all living organisms **without exception**.



- ▶ Isolated metabolic reactions *in vitro* are not living things but surely living reactions. Hence, cellular organisation of the body is the **defining feature of life forms**.

#### 4. Consciousness

- ▶ The living organisms have the ability to sense their surroundings or environment and respond to these environmental stimuli which could be physical, chemical or biological.
- ▶ Plants respond to external factors like light, water, temperature, other organisms, pollutants, etc.
- ▶ Photoperiod affects reproduction in seasonal breeders, both plants and animals.

#### ✓ Maximise Your Marks

Human being is the **only organism** who is aware of himself, i.e., has **self-consciousness**. Consciousness therefore becomes the defining property of living organisms.

- ▶ Living organisms are self-replicating, evolving and self-regulating interactive systems capable of responding to external stimuli.

#### ✍ NCERT Fill-up

- \_\_\_\_\_ is called 'The Darwin of the 20<sup>th</sup> century'
- The numbers and types of organism present on earth represent \_\_\_\_\_

### Diversity In The Living World

- ▶ **Biodiversity** refers to the number and types of organisms present on earth. The number of species that are known and described range between 1.7 - 1.8 million.

#### Systematics

- ▶ It is the study of different kinds of organisms, their diversities and relationships among them.
- ▶ The word 'systematics' is derived from the Latin word '**Systema**' which means systematic arrangement of organisms.
- ▶ Linnaeus used **Systema Naturae** as the title of his

publication.

- ▶ Systematics takes into account **evolutionary relationships** between organisms.

#### Taxonomy

- ▶ Taxonomy is defined as the science of identification, nomenclature and classification of organisms.
- ▶ The **main goal of taxonomist** is to identify the species (basic unit of classification).

**Classification**- Arrangement of animals and plants into convenient categories based on easily observable characteristics

**Identification**- Correct description of organisms

Study of

#### Taxonomy

Study of

**Nomenclature**- Naming of living organisms such that a particular organism is known by the same name all over the world

**Characterization**- Based on the understanding of characters of organisms like external and internal structure (morphology and anatomy), the structure of the cell (cytology), developmental process (embryology) and ecological information (ecology) of organism.

**Scientific names:** These are the names given to the organisms by biologists based on universally accepted principles and criteria.

- ▶ The scientific names ensure that each organism has only one name. Description of any organism should enable the people (in any part of the world) to arrive at the same name.
- ▶ To accomplish this, certain international codes have been established. These codes are

(i) **ICBN**-International Code for Botanical Nomenclature

(ii) **ICZN**-International Code for Zoological Nomenclature

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## Binomial Nomenclature

- It was proposed by Carolus Linnaeus.

### Binomial nomenclature

2 components

#### Generic name (genus)

- First word
- Starts with capital letter
- E.g., *Mangifera*

#### Specific epithet (species)

- Second word
- Starts with small letter
- E.g., *indica*

## Universal Rules of Nomenclature

- Latinised or derived from Latin irrespective of their origin
- Printed in italics to indicate their Latin origin
- Separately underlined when hand-written
- Name of the author is written in an abbreviated form after the specific epithet, i.e., at the end of the biological names
- Name of the author is printed in Roman

## Advantages of binomial nomenclature

- The biological name are same all over the world.
- They are definite and accepted universally.
- All newly discovered plants and animals can be named, classified and described easily.

### NCERT Fill-up

- The process of naming of living organisms is called \_\_\_\_\_
- ICBN stands for \_\_\_\_\_ whereas ICZN stands for \_\_\_\_\_
- The system of providing a scientific name to an organism with two components is called \_\_\_\_\_ and was given by \_\_\_\_\_
- The two components of Binomial Nomenclature are \_\_\_\_\_ and \_\_\_\_\_
- Both the words in a biological name, when handwritten are \_\_\_\_\_ or printed in \_\_\_\_\_ to indicate their \_\_\_\_\_ origin.
- There are many categories/ranks in classification and are generally referred to as taxonomic categories or \_\_\_\_\_
- The title of Linnaeus's publication is \_\_\_\_\_

## Taxonomic Categories

- The system of organising organisms in a definite sequence of various taxonomic categories in a descending order is called **taxonomic hierarchy**.
- Each category, referred to as a unit of classification, represents a rank and is commonly termed as **taxon**.
- The **basic requirement** to place an organism in various categories is the knowledge of characters of an individual or group of organisms. This helps in identifying similarities and dissimilarities among the individuals of the same kind of organisms as well as of other kinds of organisms.

<b>Species</b>	A group of individuals with <b>similar morphological characters</b> , which are able to breed among themselves and produce their own kind.
<b>Genus</b>	Group of related species which resemble one another in certain <b>correlated characters</b> .
<b>Family</b>	It includes <b>one or more related genera</b> , differentiated from other related families by certain characteristic differences.
<b>Order</b>	It includes one or more <b>related families</b> .
<b>Class</b>	It includes one or more <b>related orders</b> .
<b>Phylum</b>	It includes all organisms belonging to different classes having a few common characters. Botanists use the term Division for phylum.
<b>Kingdom</b>	It includes all organisms that <b>share a set of distinguishing common characters</b> . Plants are put in plant kingdom while animals are included in Animal kingdom. This is the <b>highest taxonomic</b> category.

- As we go higher from species to kingdom, the number of common characteristics goes on decreasing.
- Lower the taxa, more are the characteristics that the members within the taxon share.

### ✓ Maximise Your Marks

**Taxonomic categories showing hierarchial arrangement in ascending order:**

Species → Genus → Family → Order → Class → Phylum or Division → Kingdom



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Table: Organisms with their Taxonomic Categories

Common Name	Biological Name	Genus	Family	Order	Class	Phylum/ Division
Man	<i>Homo sapiens</i>	<i>Homo</i>	Hominidae	Primata	Mammalia	Chordata
Housefly	<i>Musca domestica</i>	<i>Musca</i>	Muscidae	Diptera	Insecta	Arthropoda
Mango	<i>Mangifera indica</i>	<i>Mangifera</i>	Anacardiaceae	Sapindales	Dicotyledonae	Angiospermae
Wheat	<i>Triticum aestivum</i>	<i>Triticum</i>	Poaceae	Poales	Monocotyledonae	Angiospermae

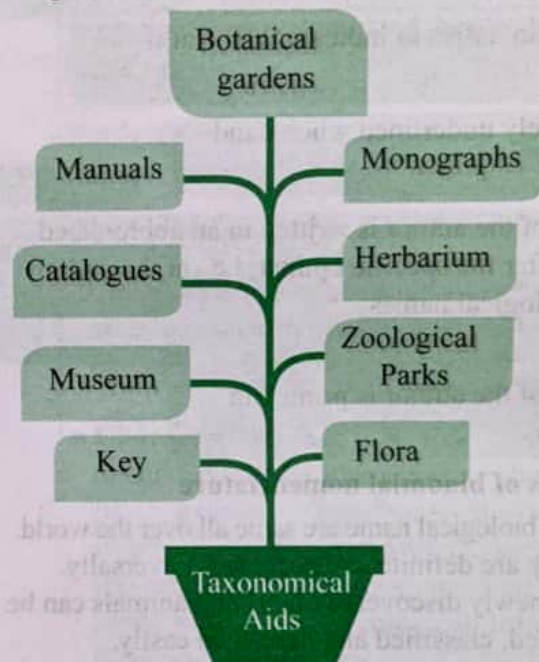
## NCERT Fill-up

- In classification; all categories together constitute \_\_\_\_\_.
- The scientific names of Housefly, Wheat & Lion is \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ respectively.
- Brinjal and potato belong to the same genus \_\_\_\_\_.
- Lion, leopard and tiger belong to the same genus \_\_\_\_\_.
- Cats and dogs belong to the families \_\_\_\_\_ and \_\_\_\_\_ respectively.
- Genera *Solanum*, *Petunia* and *Datura* are placed in the same family \_\_\_\_\_.
- Plant families like Convolvulaceae, Solanaceae are included in the order \_\_\_\_\_ mainly based on the \_\_\_\_\_ characters.
- Order Primata and Carnivora are included in the same class \_\_\_\_\_.
- Ascending order of hierarchial arrangement of taxonomic categories is Species → Genus → \_\_\_\_\_ → \_\_\_\_\_ → Class → \_\_\_\_\_ → Kingdom.

## Taxonomical Aids

- Taxonomical aids are used for **identification and**

**classification of an organism**, and the information gathered is stored along with the specimens.



- The collection of actual specimens of plant and animal species is essential and is the **prime source** of taxonomic studies. These are also fundamental to studies and essential for training in systematics.
- Biologists have established certain procedures and techniques to store and preserve the information as well as the specimens.

Herbarium	Botanical Garden	Museum	Zoological Parks
Store house of <b>collected plant specimens</b> that are dried, pressed and preserved on sheets.	Collection of <b>living plants</b> for reference.	Collections of <b>preserved plant and animal specimens</b> for study and reference.	Places where <b>wild animals</b> are kept in <b>protected environments</b> under human care
General <b>Sheet size</b> : 29 × 41.5 cm or 16 ½ × 11 ½ Inch	Each plant in Botanical Garden indicating its botanical/scientific name and its family.	Specimens are preserved in the containers or jars in preservative solutions	Enable us to <b>learn</b> about their <b>food habits</b> and <b>behavior</b> .



<b>Vasculum:</b> Special type of box where plants are kept.	<b>Royal Botanical Gardens</b> are at Kew (England) ( <b>Largest</b> herbarium in <b>world</b> ) <b>Indian Botanical Garden,</b> Howrah (India) ( <b>Largest</b> herbarium in <b>India</b> )	Insects are preserved in insect boxes after <b>collecting, killing and pinning.</b> Larger animals like birds and mammals are usually stuffed and preserved.	
<b>HgCl<sub>2</sub></b> is used to protect specimens from pests and insects	National Botanical Research Institute, Lucknow (India).	Museums often have <b>collections of skeletons of animals</b> too. Plant and animal specimens preserved as <b>dry specimens.</b>	

### Other Taxonomical Aids

<b>Key</b>	Used for identification of plants and animals <b>based on the similarities and dissimilarities.</b> Based on the contrasting characters generally in a pair called <b>couplet.</b> Results in <b>acceptance of only one and rejection of the other.</b> Analytical in nature.
<b>Flora</b>	Contains the actual account of habitat and distribution of plants of a given area. These provide the index to the plant species found in a particular area. J. D. Hooker wrote " <b>Flora of British India</b> "
<b>Manuals</b>	Useful in providing information for <b>identification of names of species</b> found in an area.
<b>Monographs</b>	Contain information on <b>any one taxon.</b>

#### NCERT Fill-up

- \* \_\_\_\_\_ is a store house of collected plant specimens that are dried, pressed and preserved on the sheets.
- \* Indian Botanical Garden is at \_\_\_\_\_ and National Botanical Research Institute is at \_\_\_\_\_.
- \* The Botanical Garden in London is located at \_\_\_\_\_.
- \* \_\_\_\_\_ are tools that help in identification of plant and animals based on similarities & dissimilarities.

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## Fact Based Questions

- Which of the following taxonomic aids provide information about the local flora as well as flora of distant areas ?  
 a. Museum, herbarium  
 b. Herbarium, botanical garden  
 c. Botanical garden, museums  
 d. Herbarium, flora
- The taxonomical aid used for identification of plants and animals based on the similarities and dissimilarities  
 a. Also show actual account of habitat  
 b. Maintains collections of preserved plant and animal specimens  
 c. Is generally analytical in nature  
 d. Is associated with in-situ conservation strategies
- Amongst the given taxonomic aids, how many are related to preservation of specimens? [Monograph, Flora, Key, Museums, Botanical Gardens, Catalogue, Herbarium, Manual]  
 a. One  
 b. Three  
 c. Two  
 d. Four
- How many (in number) of the following properties are the defining characteristics of living organisms?  
 Growth, reproduction, metabolism, cellular organisation, consciousness  
 a. 2  
 b. 3  
 c. 4  
 d. 5
- Which one of the taxonomic aids can give comprehensive account of complete compiled information of any one genus of family at a particular time?  
 a. Taxonomic key  
 b. Flora  
 c. Herbarium  
 d. Monograph
- The scientific name of banyan is written as *Ficus bengalensis* L. which of the following is a correct statement regarding this?  
 a. Letter L signifies Latin language.  
 b. The name should be reverse with *bengalensis* preceding *Ficus*  
 c. Letter L signifies taxonomist Linnaeus  
 d. *Bengalensis* is generic name

- Arrange the following taxonomic categories in increasing number of common characteristics w.r.t. plant mango-  
 A. Dicotyledonae  
 B. Polymoniales  
 C. *Mangifera*  
 D. Angiospermae  
 E. Anacardiaceae

- D → A → B → E → E
- C → E → A → E
- D → A → E → C
- D → A → C → E

- Which of the following provide ecological, economical and ethanobotanical data of any plant species?

- Botanical garden
- Herbarium
- Zoological park
- Photographs

- Herbarium is:

- A garden where medicinal plants are grown
- Garden where herbaceous plants are grown
- Dry garden
- Chemical to kill plants

- Which of the following biological processes does not operate within the life span of a given organism?

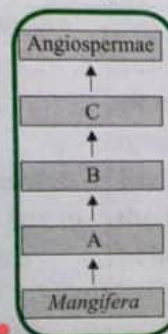
- Birth and nutrition
- Growth and maturation
- Metabolism and excretion
- Decomposition and mineralisation

- Which is essential and is the prime source of taxonomic studies of plants and animals?

- Identification
- Nomenclature
- Classification
- Collection of actual specimens

## Image Based Questions

- Recognise the following flow diagram and find the correct options according to taxonomic hierarchy.

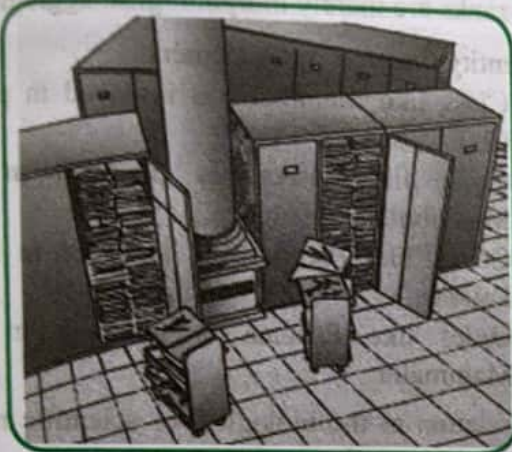




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- 'A' is comparable to muscidae while 'B' is at the same level as that of primata.
- 'C' includes all the angiosperms having two cotyledons in their seeds.
- For wheat 'A' is poaceae, 'B' is poales and 'C' is monocotyledonae.
- All of the above statements are correct.

13. Which of the statement is correct regarding the figure given below?



- Plant and animal species are dried, pressed and preserved on sheets.
- It serves as quick referral systems in taxonomical studies.
- These have collections of living plants for reference.
- Children love visiting these places.

## Match The Column

14. Match the columns and find out the correct combination:

A. Couplet	1. Contains information of any one taxon
B. Lead	2. Contains information regarding preserved specimen
C. Monograph	3. Provides information for identification of species name
D. Manuals	4. Each statement in the key
	5. Based on a pair of contrasting characters

a.	A-5	B-4	C-1	D-3
b.	A-4	B-2	C-3	D-1
c.	A-1	B-3	C-2	D-4
d.	A-3	B-1	C-4	D-2

15. Match the organism in Column-I with their family in Column-II:

Column-I	Column-II
A. Wheat	1. Hominidae
B. Mango	2. Muscidae
C. Housefly	3. Anacardiaceae
D. Man	4. Poaceae

a.	A-3	B-4	C-1	D-2
b.	A-4	B-3	C-2	D-1
c.	A-4	B-3	C-1	D-2
d.	A-2	B-1	C-4	D-2

16. How many features are incorrect for lichens?

- Slow growing annual plants
  - Water pollution indicator
  - Predominant phycobionts as green algae
  - Autotrophic partner may be prokaryotes or eukaryotes
  - Major fungal partner as club fungi
- B & E only
  - A, B & E
  - B, C & E
  - B & D

17. Some animals with their respective taxonomic category are given below. Which of the following is correctly matched?

- Man - Class Primata
- Mango - Family Anacardiaceae
- Wheat - Order Poaceae
- Leopard - Genus pardus

18. Match the correct scientific name of organisms according to international rules of nomenclature with their respective description

- Panthera Tigris* - Leopard, well - protected in Bandhavgarh National Park
- Musca domestica* - Fruit fly, Mechanical vector of pathogens which cause diseases in humans only.
- Azadirachta indica* - Indian lilac, potential for controlling pests of stored products
- Entamoeba coli* - A protozoan pathogen commonly found in the human intestine

19. Select incorrect match

- Herbarium - Quick referral system
- Zoological park - Breeding of rare fauna
- Museums - Preservation of large animals as skeletons only
- Monographs - Complete information of any one taxon



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## Conceptual Based Questions

20. Read the following statements and identify the correct statements:

- A. Biodiversity refers to the number and types of organisms present on earth.
  - B. The local names would vary from place to place, even within a country.
  - C. The number of species that are known and described range between 1.7-1.8 million.
  - D. International Code for Botanical Nomenclature (ICBN) provides scientific names for plants
  - E. Nomenclature or naming is only possible when the organism is described correctly.
- a. A and B only                      b. A, B and C only  
c. A, D and C only                  d. All of these

21. Read the following statements regarding biological museums:

- A. Biological museums are generally set up in educational institutes such as schools and colleges
- B. Museums have collections of preserved plant and animal specimens for study and reference
- C. Specimens are preserved in the containers or jars in preservative solutions.
- D. Insects are preserved in insect boxes after collecting, killing and pinning.
- E. Larger animals like birds and mammals are usually stuffed and preserved
- F. Skeletons of mammals are not allowed to be kept in museums

Which of the above statements is/are not correct?

- a. B and C                      b. A and F  
c. E only                      d. F only

22. Which of the following statements are correct regarding binomial nomenclature?

- A. If species epithet is derived from name of person then its first letter is always non-italic.
- B. Same specific epithet cannot be used for different genera.
- C. The scientific names are printed in italics to indicate their Latin origin.
- D. Authors name appear just after the generic epithet in an abbreviated form.

- a. A and B                      b. A and C  
c. B and C                      d. Only C

23. Incorrect statement is:

- a. Naming is only possible when the organism is described correctly.
- b. Scientific names are based on the principles and criteria provided in ICBN.
- c. Description of any organism should enable the people (in any part of the world) to arrive at the same name.
- d. Category denotes rank, and these categories or ranks are merely morphological aggregates.

24. Identify the incorrect statement:

- a. Class like Mammalia is involved in phylum Chordata
- b. Order like Insecta is involved in class Mandibulate
- c. Genus like *Panthera* is involved in family Felidae.
- d. Order like Primata is involved in class Mammalia

25. In relation to the biological or scientific names, which is wrong?

- a. Scientific names are generally in Latin and printed in Italics
- b. Scientific names ensure that one organism has only one name
- c. Scientific names are used all over the world
- d. One scientific name can be used for two related species

26. Select the incorrect statement with respect to the taxon, 'genus'.

- a. It is a group or assemblage of related species
- b. A genus essentially possesses more than one number of species.
- c. Lion, Tiger, Leopard are closely related species which have been placed in the genus *Panthera* and are respectively named as *Panthera leo*, *P. tigris* and *P. pardus*.
- d. *Solanum*, *Penicillium*, *Withania* and *Asparagus* are the examples of genera.

27. Read the following statements and select the correct ones.

- A. Increase in mass and increase in number of individuals are twin characteristics of growth
- B. Metabolic reactions can be demonstrated outside the body in isolated cell-free system
- C. 'Feel or response to stimuli' is a defining property of living organisms

- a. A and B                      b. B and C  
c. A and C                      d. All of these



28. Need for a proper system of classification arises because

- The organisms of the past cannot be studied without it.
- Classification help in knowing the relationship among the different group of organisms.
- It is not possible to study every organism.
- All of the above

29. Which of the following option has incorrect statements.

- National botanical gardens are great places to team about the food habits and behavior of animals.
- Catalogue is a booklet containing a list of characters
- A museum has collection of photographs of plants and animals.
- Key's flora, manuals and monographs are useful taxonomical aids for identification of plants and animals.

a. A and B

b. B and D

c. A, B and C

d. B, C and D

30. Study the statements given below and select how many out of them are correct.

- Photoperiod can affect the reproduction in seasonal breeders.
- Scientific names are derived from Roman language.
- Definition of biological species and binomial nomenclature was given by R.H. Whittaker and Ernst Mayr respectively.
- Perception and memory events that occurs in the surrounding environment is an exclusive characteristic of living organisms.
- Classification is a single step process and thus one can easily distinguish one species from the other.

a. Two

b. Three

c. Five

d. One

## NEET PAST 5 YEAR QUESTIONS

### Diversity In The Living World

1. Select the correctly written scientific name of Mango which was first described by Carolus Linnaeus (2019)

- Mangifera indica* Car. Linn.
- Mangifera indica* Linn.
- Mangifera indica*
- Mangifera Indica*

Ref. NCERT, Class (XI), Ch - 1, Pg. 7

### Taxonomical Aids

2. Match the items given in Column I with those in Column II and select the correct option given below (2018)

Column-I	Column-II
A. Herbarium	1. It is a place having a collection of preserved plants and animals.

B. Key

2. A list that enumerates methodically all the species found in an area with brief description aiding identification

C. Museum

3. Is a place where dried and pressed plant specimens mounted on sheets are kept.

D. Catalogue

4. A booklet containing a list of characters and their alternates which are helpful in identification of various taxa.

a. A-1 B-4 C-3 D-2

b. A-3 B-2 C-1 D-4

c. A-2 B-4 C-3 D-1

d. A-3 B-4 C-1 D-2

Ref. NCERT, Class (XI), Ch - 1, Pg. 11-13

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## ANSWER KEY & EXPLANATIONS

### NEET Replica Answer Key

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
b	c	c	b	d	c	c	b	c	d	d	d	b	a	b	b	b
18	19	20	21	22	23	24	25	26	27	28	29	30				
c	c	d	d	d	d	b	d	b	d	b	c	a				

### Past Year Answer Key

1	2
b	d

### NEET Replica Explanations

2. (c) Ref. NCERT, Class (XI), Ch - 1, Pg. 13
3. (c) Herbarium and Botanical Gardens only have preserved specimens. Rest all taxonomic aids have living organisms or their listed descriptions
4. (b) Metabolism, cellular organisation and consciousness are the defining property of living organism without exception. Growth and reproduction are not the defining property as they have certain exceptions.
5. (d) Monographs contain information on any one taxon.
6. (c) Ref. NCERT, Class (XI), Ch - 1, Pg. 7
9. (c) Ref. NCERT, Class (XI) Ch - 1, Pg. 11
10. (d) The biological processes operate within the life span of a given organism includes giving birth to new ones, take and provide food for nutrition, growth and maturation, metabolic reactions and excretion of waste substances.
11. (d) Collection of actual specimen is essential and is the prime source of taxonomic studies of plants and animals.

12. (d)



13. (b) A herbarium is shown in the above figure. It is a store house of collected plant specimens that are dried, pressed and preserved on sheets. Children love visiting zoological parks.
14. (a) Key is another taxonomical aid used for identification of plants and animals based on the similarities and dissimilarities. The keys are based on the contrasting characters generally in a pair called couplet. Each statement in the key is called a lead. Manuals are useful in providing information for identification of names of species found in an area. Monographs contain information on any one taxon.
15. (b) Wheat – Poaceae  
Mango – Anacardiaceae



Housefly – Muscidae

Man - Hominidae

19. (c) Museums have collection of preserved dead plant and animal material.

20. (d) All the given statements are correct

21. (d) Biological museums are generally set up in educational institutes such as schools and colleges. Museums have collections of preserved plant and animal specimens for study and reference. Specimens are preserved in the containers or jars in preservative solutions. Museums often have collections of skeletons of animals too.

22. (d) The universal rules of nomenclature are as follows:

- A. Biological names are generally in Latin and written in italics. They are Latinised or derived from Latin irrespective of their origin.
- B. The first word in a biological name represents the genus while the second component denotes the specific epithet.
- C. Both the words in a biological name, when handwritten, are separately underlined, or printed in italics to indicate their Latin origin.
- D. The first word denoting the genus starts with a capital letter while the specific epithet starts with a small letter.

23. (d) Category denotes rank and each rank or taxon represents a unit of classification. These taxonomic categories are distinct biological entities and not merely morphological aggregates.

24. (b) Insecta is a class and its order is Diptera.

25. (d) One scientific name cannot be used for two related species.

26. (b) Ref. NCERT, Class (XI) Ch - 1, Pg. 9

Genera are aggregates of closely related species. Each genus may have one or more than one specific epithets representing different organisms, but having morphological similarities. For example, Lion (*Panthera leo*), leopard (*P. pardus*) and tiger (*P. tigris*) with several common features, are all species of the genus *Panthera*.

27. (d) Ref. NCERT, Class (XI), Ch - 1, A - Pg. 3; B & C - Pg. 5

All living organisms grow. Increase in mass and increase in number of individuals are twin characteristics of growth. The sum total of all the chemical reactions occurring in our body is metabolism. Metabolic reactions can be demonstrated outside the body in cell-free systems. The most obvious and technically complicated feature of all living organisms is this ability to sense their surroundings or environment and respond to these environmental stimuli which could be physical, chemical or biological.

28. (b) Classification is the process by which anything is grouped into convenient categories based on some easily observable characters. It helps to know and establish relationships between organisms.

29. (c) Museums have collections of preserved plant and animal specimens. Botanical gardens are grown for identification purposes.

30. (a) Scientific names are derived from Latin language. Binomial nomenclature naming system was given by Carolus Linnaeus. Classification is not a single step process.

# Neetaiimspreparation